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ABSTRACT

At the middle and elementary school levels, cultivating an interest in science has been considered an important goal. The primary aim should be to foster a desire for participation in science courses and activities. Research results suggest that schools do not provide a curriculum that supports science interests, and student attitudes toward science are increasingly negative. It was noted that students are seldom permitted to have input into determining science curriculum or the order in which topics are studied. This exploratory study was to examine upper urban elementary students regarding: (1) the degree of interest in exploring science issues; (2) student-indicated interests in science; (3) the extent to which students have input in selecting topics or projects for science classes; and (4) what science activities are of most interest to them. The findings indicated that a large proportion of the students expressed interest in studying science, exploring science issues, and studying topics of the human body, astronomy, animals, heredity, and electricity. Two-thirds of the students reported they seldom or never had input into the selection of class projects or topics. Included are tables showing student responses in percentage form and a list of references. (RT)

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Science Interests of Urban Seventh Graders

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Introduction

Cultivating an interest in science has been long recognized as an important goal at the elementary and middle school levels. As early as 1924, Pollack stated that our primary aim should be to ensure interest in science and cultivate a desire for involvement in science courses and activities. However, research findings (Berryman, 1983; Malcolm, 1983) suggest that schools do not provide a curriculum that would support science interests or foster students' positive attitudes toward science. The results of the 1981-82 National Assessment in Science (NAEP, 1983) revealed that attitudes toward science are increasingly negatively; 9-, 13-, and 17-year-olds showed a marked decline in their interest in science. Doran and Jacobson (1984) reported that American fifth graders' responses to statements on an international learning inventory suggest that teachers seldom use students' ideas for planning lessons or selecting topics to study in science. Relatedly, Yager and Pennick (1984) found that only a few students indicated that they have input into determining the science content or the order in which topics are considered.

Purpose

The purpose of this exploratory study was to examine the science interests of upper elementary students. The questions that guided the study were:

1. How interested are urban middle school students in exploring science issues?
2. What do urban middle school students indicate as their interests in science?
3. To what extent do middle school students have input in selecting topics or projects for science lessons/classes?
4. What science activities are of most interest to urban middle school students?

Methodology

Sample

One hundred thirty-nine students participated in this study. They were seventh graders from an urban school in northern New Jersey. Forty-two percent were males and 58 percent were females. The racial composition consisted of 69 percent Black, 16 percent Hispanic, 7 percent White, and 8 percent other ethnic minorities.

Instrument

A survey instrument was developed by the project staff, reviewed by science teachers, and administered to the students in the spring of 1988. The instrument was designed to identify students' preferences for selected science topics and science activities. Additionally, students were asked how interested they were in exploring science issues.

Data Analysis

Descriptive statistics were used to analyze the results. Frequencies of responses were tabulated and percentages were computed for the total group and separately for males and females.

Findings

Interest in Exploring Science Issues

A large proportion of seventh graders expressed some interest in studying science. A third of the students were very interested in science; slightly more males than females said they were very interested in science. Only four percent of the seventh graders were definitely not interested in exploring science issues and 23 percent were not sure (Table 1).

Table 1

Students' Interest in Science Issues

Level of Interest	Total %	Males %	Females %
Very Interested	38	40	36
A Little Interested	35	31	36
Not Interested	4	3	5
Don't Know	23	26	23

Student Input in Science Classes

Two-thirds of the students said they never or seldom had input into selecting class topics or projects. Of the small proportion of students who did indicate they had input often or sometimes, more males than females reported frequent opportunities for choosing topics and/or projects (Table 2).

Table 2

Frequency of Student Input in Science Classes

Frequency of Input	Total %	Male %	Female %
Often	9	14	6
Sometimes	24	28	22
Seldom	35	26	39
Never	32	32	33

Interest in Selected Science Topics

Students reported how much they liked a number of science topics covered in seventh grade. Males did not exhibit a strong dislike for any one of the 28 selected science topics. However, females indicated a strong dislike for three topics: insects, pollution, and earthquakes.

The majority of urban seventh graders were interested in studying the human body, astronomy, animals, heredity, and electricity (Table 3). Males were most interested in the human body, astronomy, machines, electricity, animals, and the atmosphere. For females, their strongest interests were the human body, animals, the atmosphere, and astronomy.

While females only expressed very strong interests in a few topics, they did indicate that they were somewhat interested in topics like the weather (43%), ocean (41%), digestion (40%), plants (39%), and heredity (38%).

Table 3

Topics Students Liked a Lot

Topic	%
(All Students)	
human body	57
astronomy	39
animals	37
heredity	25
electricity	25
(Males)	
human body	55
astronomy	47
machines	41
electricity	41
animals	40
atmosphere	40
(females)	
human body	58
animals	36
atmosphere	36
astronomy	34

Science Activities

The most popular strategies for learning science were discussions (51%), drawing (51%), group projects (49%), and observation (46%). Females expressed stronger preferences than did males for group projects, discussions, and activities that require drawing. Many of the students, especially females, were not sure if they liked keeping logs (Table 4).

Table 4

Students' Preference for Basic Ways of Learning Science

Strategy for Learning	Response to Often		
	Total %	Male %	Female %
Weigh	19	24	13
Measure	18	16	16
Observe	46	46	49
Diagram	33	31	33
Keep Logs	20	24	17
Draw	51	46	55
Discuss	51	46	59
Work on group project	49	40	60

Students indicated to what extent they would like to engage in a number of in- and out- of school science activities. Their responses to out-of-school activities revealed that students would frequently watch science programs on television and a fourth of the students would like to have a science hobby or participate in a science club, especially the males (Table 5).

Table 5

Students' Interest in Out-of-School Science Activities

Activity	Response to Often		
	Total %	Males %	Females %
Watch science shows on TV	34	42	25
Read science articles in magazines/ newspapers	26	28	24
Talk to friends about science topics	27	28	24
Have a science hobby	25	27	24
Participate in science club	25	30	19
Listen to people give talks in science	19	22	15

Regardless of sex, the students' favorite school science activities were field trips and doing experiments. Students, especially females, were least interested in doing science reports and reading books about science and scientists (Table 6).

Table 6

Students' Responses for Selected In-School Science Activities

Activity	Response to Often		
	Total %	Males %	Females %
Take field trips	60	59	63
Participate in science experiments	56	51	57
Do a science report	22	26	17
Read books about science or scientists	14	15	13

Students were asked if they wanted to visit a number of science-related places and sites. Visiting a science laboratory where scientific research is done was of interest to half of the students. Almost all the students wanted to go to the beach (88%) or visit a broadcasting station (86%). The museum, planetarium, mountains, and the ocean were other places of interest to both males and females (Table 7).

Table 7

Most Popular Science-Related Places/Sites

Place/Site	Total %	Male %	Female %
Beach	88	88	89
TV or Radio Station	86	81	87
Museum	66	69	62
Planetarium	64	69	59
Mountain	62	65	56
Ocean	62	65	60
Park	58	54	60
Skyscraper	58	60	55
Science Laboratory	57	58	56
Zoo	56	52	59
Large City	55	45	64
Airport	51	54	50

Conclusions and Implications

Urban seventh graders are still interested in science and have definite ideas about the topics and issues they want to study. At this age level, both sexes are interested in studying issues related to biology and astronomy, but females are also interested in health, and males, physics. Further investigation is needed to understand why students like or dislike certain science topics.

Teachers need to make adjustment in their teaching practices to accommodate students' preferences for science topics and strategies of

learning science. There is also the challenge of finding meaningful ways to help students to become knowledgeable about unfamiliar science content and expand their awareness of the usefulness of studying science topics they find least interesting. For example, females need to be motivated to study physics and chemistry, while males must be challenged to learn about ecology and meteorology.

Students are interested in learning science through active experiences. They want to go on field trips, do experiments, and work on group projects. Additionally, both males and females are interested in science activities that require drawing. A possible strategy for expanding students' interest is to use these preferred learning strategies when students study their least favorite science topic(s).

The identification and utilization of students' interests in science have not been a prevalent practice of classroom teachers. Yet, if teachers are going to truly influence and improve science education, they must begin to place importance of student input and incorporate students' ideas and preferences in planning science lessons.

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